BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N**
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

(U) COST: (Dollars in Thousands)

Project Number & Title	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
H1109 CH/MH-53	1,163	2,775	4,009	472	2,382	3,024	3,108	3,182	cont	cont
H1709, CH-60 VERTREP*	0	25,940	19,634	0	0	0	0	0	0	52,484
RDT&E Test Articles										1
H2415 CH-60S Development**	29,694	11,972	15,279	13,287	15,744	6,437	5,953	5,448	cont	cont
H2463, LAMPS III DATALINK***	0	2,993	9,854	10,852	25,621	0	0	0	0	49,320
RDT&E Test Articles			1	4	2					7
TOTAL	**30,857**	**43,680**	**48,776**	**24,611**	**43,747**	**9,461**	**9,061**	**8,630**	**cont**	**cont**
Quantity of RDT&E Articles			**1**	**4**	**2**					**8**

* H1709: FY99 control reflects a $13,352 thousand Above Threshold Reprogramming action. FY00 control includes $11,927 thousand for Airborne Mine Counter Measure (AMCM) efforts.

** H2415: FY98 includes $29,694 thousand for CH-60S VERTREP developmental efforts. FY 98 reflects CH-60S VERTREP only. FY 99 reflects both CH-60S VERTREP and AMCM efforts. FY 00 reflects Airborne Mine Counter Measures (AMCM) efforts.

*** H2463: FY 99 estimate includes a congressional transfer of $2,993 thousand from the CEC program for the LAMPS MK III Data Link executed under project H2632.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) H1109- From FY-96 through FY-98, a Service Life Assessment Program (SLAP) was conducted to develop usage and fatigue life profiles for the H-53E. The resultant SLAP Report will serve to justify commencement of Phase I of the Service Life Extension Program (SLEP) which is funded in APN-5. In addition, in FY-98, the program completes a White House requirement to competitively procure, install, test and evaluate an Integrated Mechanical Diagnostic (IMD) system on two Marine Corps CH-53E helicopters as an Early Operational Assessment (EOA). In FY-99 RDT&E, Service Life Assessment Program (SLAP) commences a two year effort on the CH-53D. The Marine Corps Aviation Plan shows the CH-53D remaining in service until 2008. Therefore a Service Life Assessment Program (SLAP) must be conducted in order to ascertain what actions must be taken to safely operate the aircraft until it is replaced by the MV-22. The results will be a report to identify specific actions required to make CH-53D a supportable, viable weapons system until it is retired from service. The report shall include, at a minimum, identification of airframe structural modification changes, aircraft wiring changes, and adjustment of maintenance intervals for components. In FY-00 the program will populate the dynamic component model at

Carderock to examine the feasibility of carrying separate loads on the existing CH-53E's three cargo hooks. Once modeled, a prototype system will be designed, fabricated and flown on an aircraft. Additionally, a load matrix will be developed during testing to document which loads are to be carried by selected hook configurations. Also, from FY-99 to FY-05, RDT&E H-53E efforts commence to develop and qualify components to replace obsolete system components and incorporate supportability improvement modifications. The requirement will include identification of candidate architectures for the H-53E avionics suite. Modeling and simulation will be used to the maximum practical extent throughout this effort. In addition, a parallel effort will be required addressing component parts obsolescence, such as the VIR-31, AIC-14, AFCS, 10804 GYRO, etc. To satisfy the requirement, Defense Micro Electronic Agency (DMEA) will be utilized to develop, install and test internal modifications to existing H-53E legacy avionics systems. The modifications will eliminate obsolete and/or unavailable sub-components, while retaining the original basic system footprint and functionality. As part of this effort, a complete electromagnetic vulnerability (EMV) assessment will be required for the affected and/or modified systems.

(U) H1709 - The CH-60 Fleet Combat Support (HC) Helicopter provides the Navy's combat logistics force with a Vertical Replenishment (VERTREP) at-sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of "From the Sea" and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peacekeeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60 C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible.

(U) H2463 - The LAMPS MK III helicopter is deployed in Ticonderoga Class cruisers, Spruance and Kidd Class destroyers, and Perry Class frigates, and provides an all-weather capability for detection, classification, and localization of ships and submarines. LAMPS is an integrated ship-to-helicopter, computer-to-computer weapon system designed to increase and extend the effectiveness of the surface combatant in the performance of its mission. Currently the tie linking the LAMPS helicopter to its host surface ship, is a C-Band frequency directional data link. This data link is the critical interface of the ship-to-helicopter suite because it transfers radar, ESM, IFF and acoustic information both up and down the link. The recent introduction of Cooperative Engagement Capability (CEC) into the fleet has created a major Electro Magnetic Interference (EMI) problem; for it too operates within the C-Band frequency region. Therefore, when CEC is operating, it completely masks the LAMPS data link resulting in loss of information exchange between the ship and helicopter. To resolve this EMI issue, the LAMPS data link is being moved from the C-Band frequency to the KU-Band. Funding supports development of seven test articles.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Engineering & Manufacturing Development because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT **PROJECT TITLE: CH/MH-53**

(U) COST: (Dollars in Thousands)

Project Number & Title	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
H1109 CH/MH-53	1,163	2,775	4,009	472	2,382	3,024	3,108	3,182	Cont	Cont
TOTAL	1,163	2,775	4,009	472	2,382	3,024	3,108	3,182	Cont	Cont

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: From FY-96 through FY-98, a Service Life Assessment Program (SLAP) was conducted to develop usage and fatigue life profiles for the H-53E. The resultant SLAP Report will serve to justify commencement of Phase I of the Service Life Extension Program (SLEP) which is funded in APN-5. In addition, in FY-98, the program completes a White House requirement to competitively procure, install, test and evaluate an Integrated Mechanical Diagnostic (IMD) system on two Marine Corps CH-53E helicopters as an Early Operational Assessment (EOA). In FY-99 RDT&E, Service Life Assessment Program (SLAP) commences a two year effort on the CH-53D. The Marine Corps Aviation Plan shows the CH-53D remaining in service until 2008. Therefore a Service Life Assessment Program (SLAP) must be conducted in order to ascertain what actions must be taken to safely operate the aircraft until it is replaced by the MV-22. The results will be a report to identify specific actions required to make CH-53D a supportable, viable weapons system until it is retired from service. The report shall include, at a minimum, identification of airframe structural modification changes, aircraft wiring changes, and adjustment of maintenance intervals for components. In FY-00 the program will populate the dynamic component model at Carderock to examine the feasibility of carrying separate loads on the existing CH-53E's three cargo hooks. Once modeled, a prototype system will be designed, fabricated and flown on an aircraft. Additionally, a load matrix will be developed during testing to document which loads are to be carried by selected hook configurations. Also, from FY-99 to FY-05, RDT&E H-53E efforts commence to develop and qualify components to replace obsolete system components and incorporate supportability improvement modifications. The requirement will include identification of candidate architectures for the H-53E avionics suite. Modeling and simulation will be used to the maximum practical extent throughout this effort. In addition, a parallel effort will be required addressing component parts obsolescence, such as the VIR-31, AIC-14, AFCS, 10804 GYRO, etc. To satisfy the requirement, Defense Micro Electronic Agency (DMEA) will be utilized to develop, install and test internal modifications to existing H-53E legacy avionics systems. The modifications will eliminate obsolete and/or unavailable sub-components, while retaining the original basic system footprint and functionality. As part of this effort, a complete electromagnetic vulnerability (EMV) assessment will be required for the affected and/or modified systems.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT **PROJECT TITLE: CH/MH-53**

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) ($ 393) IMD - Final incremental contract payment for completion of IMD-EOA. Initiate Open Architecture Study
- (U) ($ 380) Airframe Fatigue Assessment - Recalculation of airframe fatigue values using most recent flight test and modeling data
- (U) ($ 290) Conduct In-house travel and field activity support funding of IMD program.
- (U) ($ 100) Repair of Repairables (ROR) funded to support SLAP on the H-53E.

2. FY 1999 PLAN:

- (U) ($ 348) Develop corrective actions to replace/modify selected obsolete platform equipment.
- (U) ($ 183) In-house travel and field activities funding to support program.
- (U) ($ 2,237) In-house travel and field activities funding to support "D" SLAP program. This includes having DMEA investigate selected avionics components for microcircuit replacement in a form/fit/function box through reverse engineering. This also includes the reduction of loads data at Warner-Robbins and structures data at Cherry Point as well as modeling fidelity and data correlation at NSWC Carderock.
- (U) ($ 7) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) ($ 1,759) In-house travel and field activities funding to support "D" SLAP program. This includes continued investigation/reverse engineering of additional avionics components at DMEA; continued data reduction at Warner-Robbins, Cherry Point and NSWC Carderock; P^3I testing to determine any interference issues; and H-53D interface assessment and bench test assessment evaluation at Cherry Point,
- (U) ($ 2,000) In-house travel and field activities funding to support IELD program. This includes dynamic structures modeling, system design, and prototype development. Flight testing to determine electro environmental effects and document load matrix configuration.
- (U) ($ 250) In-house travel and field activities funding to support program.

.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT **PROJECT TITLE: CH/MH-53**

(U) B. PROGRAM CHANGE SUMMARY

	FY 1998	FY 1999	FY 2000
(U) FY 1999 President's Budget:	1,189	2,828	2,934
(U) Appropriated Value:	1,235	2,828	
(U) Adjustments from Pres Budget:	-26	-53	1,075
(U) FY 2000 President's Budget Submit:	1,163	2,775	4,009

CHANGE SUMMARY EXPLANATION:

(U) Funding: The net decrease of $26 thousand in FY 1998 is due to a decrease of $16 thousand for SBIR assessment and $10 thousand for reprogramming action. The net decrease of $53 thousand in FY-99 is due to pricing adjustments. The net increase of $1075 thousand in FY 2000 is due to an increase of $2000 for the CH-53E IELD program and a decrease of $925 thousand for balancing adjustments.

(U) Schedule: MAT/Maint SLAP (1Q/97-3Q/98) was changed to perform unscheduled maintenance resulting from SLAP flight testing due to grounding of H-53s. SLAP contractor test flight commenced 2Q/98. The SLAP CH-53D study was added to assess the critical airframe and structural fatigue life limits for the aircraft and is scheduled for 1Q/99 - 4Q/00. The CH-53E effort to develop and qualify components is scheduled for 1Q/99 - 4Q/01. The CH-53E effort to develop an Improved External Lifting Capability (IELD) is scheduled for 1Q-4Q/00.

(U) Technical: Not Applicable

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT **PROJECT TITLE: CH/MH-53**

U) C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

(U) D. ACQUISITION STRATEGY:

This is a non-ACAT program with no specific acquisition strategies.

(U) E. SCHEDULE PROFILE

	FY 1998	FY 1999	FY 2000	To Complete
(U) Program Milestones		1Q-4Q SLAP CH-53D Airframe/Structural Fatigue Life Limits	1Q-4Q SLAP CH-53D Airframe/Structural Fatigue Life Limits	
(U) Engineering Milestones	1Q-4Q MAT/MAINT SLAP		1Q-2Q Dynamic Structures Modeling 2Q-3Q IELD System Design 3Q-4Q IELD Prototype Dev	
(U) T&E Milestone	3Q-4Q98 IMD EOAT 1Q-4Q SLAP CONTR TESTFLT		3Q-4Q IELD TESTFLT	
(U) Contract Milestones		1Q-4Q CH-53E Develop & Qualify Components	1Q-4Q CH-53E Dev & Qualify Components	1Q-4Q CH-53E Dev & Qualify Components

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS **DATE: February 1999**

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROJECT TITLE: CH/MH-53

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
53D/E COMMON ITEMS	MIPR	DMEA/CA		1000	1/99				1000	1000
TECHNICAL SUPPORT	WX	NAWCAD	783	287	11/98	124	11/99	Cont	Cont	0
TRANSFER OF DMEA PROD	WX	Pax River, MD NAVICP Phila., PA						272	272	0
IELD PROTOTYPE	WX	NAWCAD PAX				200	11/99			
Subtotal Project Development			**783**	**1287**		**324**		**Cont**	**Cont**	**Cont**
Remarks										
H-53E (AVIONICS OB)	MIPR	DMEA/CA	0	348	01/99	0		0	348	348
ISRAELI DEF FORCE DATA VIA FMS	WX	NADEP CHPT	0	100	11/98	0		0	100	
MODELING/LOAD DATA ON HH/MHJ	MIPR	WARNER ROBBINS/GA	0	300	05/99	0		0	300	300
IELD DYNAMIC STRUCTURES MODELING	WX	NSWC CARDEROCK	0			500	01/00	0	500	500
MODELING FIDELITY	WX	NSWC CARDEROCK	0	300		0		0	300	0
IELD SYSTEM DESIGN	WX	NAWCAD PAX	0			325	11/99	Cont	Cont	Cont
STRUCTURES DATA ANALYSIS	WX	NADEP Cherry Point,NC	0	150	11/98	0			150	
ADD'L COMPONENTS EFFORT	MIPR	DMEA/CA	0			425	01/00	Cont	Cont	Cont
FUNCTIONAL ASSESSMENT	MIPR	DMEA/CA	0			260	01/00	Cont	Cont	Cont
BENCH TEST/INTERFACE ASSESS	WX	NADEP Cherry Point,NC	0			500	11/99	0	500	0
H-53D INTERFACE ASSESSMENT	WX	NADEP CHPT Cherry Point	0			350	11/99	0	600	0
Subtotal Support			**0**	**1198**		**2360**		**Cont**	**Cont**	**Cont**
Remarks										

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1109**
PROJECT TITLE: CH/MH-53

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
H-53 E3I Testing	WX	NAWCAD Pax River,MD				100		Cont	Cont	Cont
IELD Flight Testing	WX	NAWCAD Pax River, MD				925				
Subtotal Test & Evaluation			**0**	**0**		**1025**		**Cont**	**Cont**	**Cont**
Remarks										
PMA TRAVEL	WX	NAWCAD Pax River,MD	380	283	11/98	300	11/99	200	Cont	Cont
Subtotal Management			**380**	**283**		**300**		**Cont**	**Cont**	**Cont**
SBIR Assessment				7						
Remarks										
Total Cost			**1163**	**2775**		**4009**		**Cont**	**Cont**	**Cont**

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S VERTREP**

(U) COST: (Dollars in Thousands)

Project Number & Title	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
H1709 CH-60S Vertical Replenishment										
	0	25,940	19,634	0	0	0	0	0	0	52,484
TOTAL	**0**	**25,940**	**19,634**	**0**	**0**	**0**	**0**	**0**	**0**	**52,484**

Quantity of RDT&E Articles 1

Notes:
FY98 Project Number H2415 includes $29,694 for CH-60S developmental efforts.
FY99 control reflects $13,352 Above Threshold Reprogramming action.
FY00 control includes $11,927 for Airborne Mine Counter Measure efforts.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of "From the Sea" and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peace keeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60S C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible. In the Congressionally-directed demonstration project, Sikorsky has built a prototype CH-60S as a proof-of-concept vehicle. This aircraft was used to conduct a flight demonstration, Integrated Test (IT), and Operational Assessment (OA), including sea trials.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS: (U) See Project Number H2415.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S VERTREP**

2. FY 1999 PLAN:

- (U) ($16,537) Continue developmental efforts on a production representative CH-60S helicopter. Supplies and services include engineering investigations and studies, non-recurring engineering (NRE) and design, common cockpit analyses and integration studies, logistics support, and NRE documentation.
- (U) ($6,300) Complete common cockpit developmental efforts and anticipated pre-operational test efforts.
- (U) ($2,804) Continue Navy field activity systems engineering and test support, program management, and travel.
- (U) ($299) Portion of extramual program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) ($6,273) Reconfigure demo aircraft and continue developmental efforts on a production representative CH-60S helicopter. Supplies and services include ground and flight tests, logistics support, NRE documentation, and engineering support for testing.
- (U) ($1,434) Continue Navy field activity program management and travel.
- (U) (11,927) Sikorsky and Navy field Follow-on efforts to the Airborne Mine Countermeasure Program.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709**

PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S VERTREP**

(U) B. PROGRAM CHANGE SUMMARY

	FY 1998	FY 1999	FY 2000
(U) FY 1999 President's Budget:	0	12,775	7,832
(U) Appropriated Value:	0	12,775	0
(U) Adjustments from Pres Budget:	0	+13,165	+11,802
(U) FY 2000 President's Budget Submit:	0	25,940	19,634

CHANGE SUMMARY EXPLANATION:

Note: FY98 funding has been incorporated into project H2415.

(U) Funding –In FY99 the net increase of +$13,165 reflects an ATR increase of $13,352 thousand to fund CH-60S NRE efforts, decreased by a total of - $187 thousand reflecting a Revised Economic Assumption decrease (-$29 thousand), a Contract Advisory and Assistance decrease (-$138 thousand), FFRDC Distribution decrease (-$19 thousand), and a Civilian Personnel adjustment decrease (-$1 thousand). In FY00 the net increase of +$11,802 thousand reflects an increase of +$12,100 for Airborne Mine Counter Measures efforts and a net decrease of -$298 thousand for a balancing adjustment decrease (-$14 thousand) and a Non Pay Inflation adjustment decrease (-$284 thousand).

(U) Schedule – The CH-60S VERTREP FY98 Schedule Profile has been incorporated into project H2415. In FY99 the 4Q 1st Flight, Start Integrated Test was changed due to delay in development efforts and 1Q funds to Army Multi-Year Contract was due to ongoing negotiations with Sikorsky. In FY00 the 4Q Complete Phase III Tow Demo was added to reflect the schedule for AMCM.

(U) Technical - None.

(U) C. OTHER PROGRAM FUNDING SUMMARY

Appn	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete
APN-2 CH-60 P1#13 & 14	29,684	137,226	282,285	279,047	393,871	339,975	339,952	339,922	873,592
APN-6 CH-60 Initial Spares	0	4,999	8,381	19,397	17,122	16,186	3,744	8,867	21,323

Related RDT&E -

(U) P.E. 0604212N (CH-60S DEVELOPMENT H2415)
(U) P.E. 0604216N (MULTI-MISSION HELO UPGRADE H1707)

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S VERTREP**

(U) C. ACQUISITION STRATEGY:

Following the demonstration program, the Navy will contract with Sikorsky to continue non-recurring efforts. An Acquisition Plan and J&A has been approved for this procurement. The contract was awarded in July 1998. The Army will negotiate and incorporate via the "Changes Clause" the CH-60S production ECP into the UH-60L multi-year contract. The production ECP will be incorporated into the multi-year contract on or before March 1999.

(U) D. SCHEDULE PROFILE

	FY 1998	FY 1999	FY 2000	To Complete
(U) Program Milestones				2Q MSIII
(U) Engineering Milestones				
(U) T&E Milestones			1Q - 4Q CT/DT-IIA 3Q-4Q TECHEVAL 4Q 00 - 2Q 01 OT-IIB	1Q-2QOPEVAL
(U) Contract Milestones		2Q Funds to Army Multi-Year Contract LOT I/LRIP	4Q Complete Phase III Tow Demo for AMCM	

FY98 Project Number H2415 includes the schedule for the CH-60S developmental efforts.

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS **DATE: February 1999**

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709**
PROJECT TITLE: CH-60S VERTREP

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
CH-60S Prototype Development	SS/FFP	Sikorsky, Stratford, CT	5,749	0	N/A	0	N/A	0	5,749	5,749
Non-Recurring Engineering	SS/CPFF	Sikorsky, Stratford, CT	0	16,537	Nov 98	6,273	Nov 99	0	22,810	22,810
COTS Avionics Technology/H-60 Common Cockpit	845 O/T	Lockeed Martin, Owego, NY	0	6,300	Nov 98	0	N/A	0	6,300	6,300
Misc. In-House Engineering and Logistics	Various	Various	0	457	Nov 98	826	N/A	0	1,283	N/A
Prototype Development for Airborne Mine Counter Measure (AMCM)	SS/FFP	Sikorsky, Stratford, CT	0	0	N/A	9,957	TBD	0	9,957	9.957
AMCM Misc. House Engineering and Logistics	Various	Various	0	0	N/A	910	N/A	0	910	N/A
Subtotal Project Development			**5,749**	**23,294**		**17,966**		**0**	**47,009**	**44,816**

Remarks

Misc. In-House Engineering and Logistics	Various	Various	50	0	N/A	0	N/A	0	50	N/A
Engineering, Studies, Tech Support	Various	NAWCAD Patuxent River, MD	0	336	Nov 98	0	N/A	0	336	N/A
AMCM Misc. House Engineering and Logistics	Various	Various	0	0	N/A	200	N/A	0	200	N/A
Subtotal Support			**50**	**336**		**200**		**0**	**586**	**0**

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS **DATE: February 1999**

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H1709** **PROJECT TITLE: CH-60S VERTREP**

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Misc. Test & Evaluation	Various	Various	12	149	Nov 98	0	N/A	0	161	N/A
Test & Evaluations Engineering	Various	NAWCAD, Patuxent River, MD	0	1,270	Nov 98	0	N/A	0	1,270	N/A
AMCM Test & Evaluations Engineering	Various	NAWCAD, Patuxent River, MD	0	0	N/A	380	N/A	0	380	N/A
Subtotal Test & Evaluation			**12**	**1,419**		**380**		**0**	**1,811**	**0**
Remarks										
Misc. Management Support	Various	Various	36	592	Nov 98	608	Nov 99	0	1,236	N/A
Engineering Support	Various	NAWCAD, Patuxent River, MD	1063	0	N/A	0	N/A	0	1,063	N/A
AMCM Misc. Management Support	Various	Various	0	0	N/A	480	N/A	0	480	N/A
Subtotal Management			**1099**	**592**		**1,088**		**0**	**2,779**	**0**
Remarks										
SBIR Adjustment				**299**					**299**	
Total Cost			**6,910**	**25,940**		**19,634**		**0**	**52,484**	**44,816**

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2415**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S Development**

(U) COST: (Dollars in Thousands)

Project Number & Title	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
H2415 CH-60S Development	29,694	11,972	15,279	13,287	15,744	6,437	5,953	5,448	cont	cont
TOTAL	29,694	11,972	15,279	13,287	15,744	6,437	5,953	5,448	cont	cont

Quantity of RDT&E Articles:

Note: FY 98 reflects CH-60S VERTREP only.
FY 99 reflects both CH-60 VERTREP and AMCM efforts.
FY 00 reflects Airborne Mine Counter Measures (AMCM) efforts

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the Airborne Mine Countermeasures (AMCM) program designs, develops, integrates and ensure the interoperability of five separate AMCM sensors into the CH-60S helicopter. Included in this effort are: (1) Performance of a three Phase Tow Demonstration to test the suitability of two in-water towed AMCM sensors, the AQS-20 and the Shallow Water Influence Minesweeping System, (2) Design, develop, integrate and ensure the interoperability of a Common AMCM Sensor Console for the CH-60S capable of operating all five AMCM systems, (3) Integrate and ensure the interoperability of all five AMCM sensors into the CH-60S Common Cockpit. (4) Design, develop, integrate and ensure the interoperability of the five AMCM sensors with the CH-60S Automatic Flight Control Computer (AFCC). The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) ($16,107) Initiated contract award to Sikorsky for the non-recurring engineering efforts to develop a production representative CH-60S helicopter. Supplies and services include engineering investigations and studies, non-recurring engineering (NRE) and design, common cockpit analyses and integration studies, logistics support, and NRE documentation.

- (U) ($6,334) Awarded to Lockheed Martin a contract for development of a new design common cockpit to be used in both the CH-60S and SH-60R.

- (U) ($2,366) Awarded advisory and assistance services contracts for studies, analyses, and evaluations, professional support services, and engineering and technical services.

- (U) ($4,887) Continued Navy field activity systems engineering and test support, environmental analyses, logistics planning, program management, and travel.

2. FY 1999 PLAN:

- (U) (3,000) Continue developmental efforts on a production representative CH-60S helicopter. Supplies and services include engineering investigations and studies, non-recurring engineering (NRE) and design, common cockpit analyses and integration studies, logistics support, and NRE documentation.

- (U) ($7,806) Perform integration analysis and commence nonrecurring engineering effort supporting the development and integration of the interoperability of the Airborne Mine Counter Measures (AMCM) system into the CH-60S helicopter. Perform Phase II tow test.

- (U) ($364) Advisory and assistance services contracts for studies, analyses and evaluations, professional support services, and engineering and technical services.

- (U) ($506) Continue Navy field activity systems engineering and test support, program management, and travel.

- (U) ($296) Portion of Extramural Program reserved for Small Business Innovation Research Assessment in accordance with 15USC 638.

3. FY 2000 PLAN:

- U) ($14,128) Design, develop, integrate and support the interoperability of a Common AMCM Sensor Console for the CH-60S. Design, develop integrate and support the interoperability of Automatic Flight Control Computer (AFCC) and perform Phase III Tow Test.

- (U) ($635) Advisory and assistance services contracts for studies, analyses and evaluations, professional support services, and engineering and technical services.

- (U) ($516) Continue Navy field activity systems engineering and test support, program management, and travel.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2415**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S Development**

(U) B. PROGRAM CHANGE SUMMARY

	FY 1998	FY 1999	FY 2000
(U) FY 1999 President's Budget:	30,894	0	0
(U) Appropriated Value:	30,894	12,000	0
(U) Adjustments from Pres Budget:	-1,200	11,972	15,279
(U) FY 2000 President's Budget Submit:	29,694	11,972	15,279

CHANGE SUMMARY EXPLANATION:

(U) Funding The FY 98 net decrease of -$1,200 thousand reflects SBIR (-$852 thousand) and BTR (-$348 thousand) reductions. The FY 99 net increase of $11,972 thousand reflects a congressional plus up for Airborne Mine Counter Measures (AMCM) (+$12,000 thousand) and a decrease for revised economic assumption (-$28 thousand). The net FY 00 increase of +$15, 279 thousand reflects an increase for AMCM Common Console and System Integration (+$15,500 thousand) and a reduction for non-pay inflation (-$221 thousand).

(U) Schedule: In FY98 the 2Q MSII/LRIP change was due to the delay in approval of Operations Requirement Document (ORD) and Acquisition Strategy Report (ASR). In addition, Common Cockpit Critical Design Review (CDR) was moved from 3Q to 4Q FY98 due delays in completing Preliminary Development Review (PDR).

(U) Technical N/A

(U) C. OTHER PROGRAM FUNDING SUMMARY

Appn	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete
APN-2 CH-60 P1# 13&14	29,684	137,226	282,285	279,047	393,871	339,975	339,952	339,922	873,592

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2415**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: CH-60S Development**

Related RDT&E

(U) P.E. 0604212N (CH-60S VERTREP H1709)
(U) P.E. 0604216N (MULTI-MISSION HELO UPGRADE H1707)

(U) C. ACQUISITION STRATEGY: Contract award is planned for March 1999.

(U) D. SCHEDULE PROFILE

	FY 1998	FY 1999	FY 2000	TO_COMPLETE
(U) Program Milestones	3Q MSII/LRIP			
(U) Engineering Milestones	4Q Common Cockpit CDR			
(U) T&E Milestones	2Q Complete Demo Test	4Q Complete Phase II Tow Demo	4Q Complete Phase III Tow Demo	
(U) Contract Milestones	4Q NRE CTR Award			

Note: FY 98 reflects CH-60S VERTREP schedule. FY 99 and FY 00 reflects Airborne Mine Countermeasures (AMCM) efforts.

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE:
February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415
PROJECT TITLE: CH-60S Development

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AMCM NRE & Tow Demo	SS/CPFF	Sikorsky, Stratford, CT	0	7,546	Feb 99	0	N/A	0	7,546	7,546
AMCM Design, Development & Integration	TBD	TBD	0	0	N/A	13,528	TBD	Cont	Cont	Cont
Common Cockpit Development	SS/FFP	Lockheed Martin, Owego, NY	6,334	0	N/A	0	N/A	0	6,334	6,334
AMCM System Integration & Analysis	SS/CPFF	Lockheed Martin Owego, NY	0	260	Feb 99	0	N/A	0	260	260
CH-60S Non-Recurring Engineering	SS/CPFF	Sikorsky, Stratford, CT	16,107	3,000	Apr 99	0	N/A	0	19,107	19,107
Subtotal Project Development			**22,441**	**10,806**		**13,528**		**Cont**	**Cont**	**Cont**
Misc. In-House Engineering and Logistics	Various	Various	2,337	0	N/A	0	N/A	0	2,337	N/A
Engineering, Studies, Tech Support	Various	NAWCAD Patuxent River, MD	1,204	364	N/A	635	N/A	Cont	Cont	N/A
Engineering, Studies & Technical Support	Various	Various	483	166	Jan 99	530	N/A	Cont	Cont	N/A
Subtotal Support			**4,024**	**530**		**1,165**		**Cont**	**Cont**	

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2415**

PROJECT TITLE: CH-60S Development

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AMCM Test & Evaluations Engineering	Various	NAWCAD, Patuxent River, MD	0	300	N/A	0	N/A	0	300	N/A
Misc. Test & Evaluation	Various	Various	634	0	N/A	0	N/A	0	634	N/A
Test & Evaluations Engineering	Various	NAWCAD, Patuxent River, MD	900	0	N/A	0	N/A	0	900	N/A
Subtotal Test & Evaluation			**1,534**	**300**		**0**		**0**	**1,834**	
AMCM Misc. Management Support	Various	Various	0	0	N/A	516	N/A	Cont	Cont	N/A
Misc. Management Support	Various	Various	1,090	40	N/A	70	N/A	50	1,250	N/A
Engineering Support	Various	NAWCAD, Patuxent River, MD	605	0	N/A	0	N/A	0	605	N/A
Subtotal Management			**1,695**	**40**		**586**		**Cont**	**Cont**	
Remarks SBIR Assessment				**296**		**0**		**0**	**296**	
Total Cost			**29,694**	**11,972**		**15,279**		**Cont**	**Cont**	

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2463**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: LAMPS MK III DATALINK**

(U) COST: (Dollars in Thousands)

Project Number & Title	FY 1998 Budget	FY 1999* Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
H2463, LAMPS MK III Data Link	**0**	**2,993**	**9,854**	**10,852**	**25,621**	**0**	**0**	**0**	**0**	**49,320**
TOTAL	**0**	**2,993**	**9,854**	**10,852**	**25,621**	**0**	**0**	**0**	**0**	**49,320**
Quantity of RDT&E Articles			1	4	2					7

*** Note:** FY 99 estimate includes a congressional transfer of $2.9M from the CEC program for the LAMPS MK III Data Link under Project H2632.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Light Airborne Multi-Purpose System (LAMPS) MK III helicopter is deployed in Ticonderoga Class cruisers, Spruance and Kidd Class destroyers, and Perry Class frigates, and provides an all-weather capability for detection, classification, and localization of ships and submarines. LAMPS is an integrated ship-to-helicopter, computer-to-computer weapon system designed to increase and extend the effectiveness of the surface combatant in the performance of its mission. Currently the tie linking the LAMPS helicopter to its host surface ship, is a C-Band frequency directional data link. This data link is the critical interface of the ship-to-helicopter suite because it transfers radar, Electronic Support Measures (ESM), Identification Friend or Foe (IFF) and acoustic information both up and down the link. The recent introduction of Cooperative Engagement Capability (CEC) into the fleet has created a major Electro Magnetic Interference (EMI) problem; for it too operates within the C-Band frequency region. In some CEC operating modes, it completely masks the LAMPS data link resulting in loss of information exchange between the ship and helicopter. To resolve this EMI issue, the LAMPS data link is being moved from the C-Band frequency to the KU-Band. This effort will concurrently add integrated data-link connectivity with new generation unmanned aerial vehicles (UAV) thus adding tremendous capability and flexibility to surface combatants while generating large cost avoidances which would otherwise accrue from installing an independent UAV data link system. Funding supports development of seven test articles.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS: N/A

2. FY 1999 PLAN:

- (U) ($1,550) Nonrecurring Engineering (NRE) for Tactical Common Data Link (TCDL) design. Exercise Defense Advanced Research Projects Agency (DARPA) option for two vendors to develop TCDL prototypes for LAMPS.

- (U) ($516) Develop KU-Band TCDL specifications and initiate effort to integrate KU-Band in Ship/Helo LAMPS Network. Identify changes in SH-60R and SH-60B Prime Item Development Specification and System Segment Specification to incorporate TCDL. Perform Preliminary Design Review (PDR) and Critical Design Review (CDR).
- (U) ($415) Technical services to evaluate vendor proposals and participate in PDR and CDR.
- (U) ($65) Management Support Services, Contract Fees, and Travel.
- (U) ($373) Field Activity Support for integration effort.
- (U) ($74) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) ($7,500) Non-recurring Engineering (NRE) to continue development of Tactical Common Data Link (TCDL) via DARPA contract. Perform In-Process Review (IPR).
- (U) ($1,000) Develop Engineering Change Proposal (ECP) to integrate TCDL onto LAMPS air and ship segments.
- (U) ($440) Technical services to review and evaluate vendor progress. Participate in IPR.
- (U) ($60) Program Management and travel.
- (U) ($854) Field Activity Engineering, Testing, and Technical Support.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2463**

PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: LAMPS MK III Data Link**

(U) B. PROGRAM CHANGE SUMMARY

	FY 1998	FY 1999	FY 2000
(U) FY 1999 President's Budget:	0	0	0
(U) Appropriated Value:	0	3,000	0
(U) Adjustments from Pres Budget:	0	2,993	9,854
(U) FY 2000 President's Budget Submit:	0	2,993	9,854

CHANGE SUMMARY EXPLANATION: N/A

(U) Funding: The net increase of $2,993 thousand in FY 1999 is a transfer of $3,000 thousand from the Cooperative Engagement Capability (CEC) Program and a revised economic adjustment of -$7 thousand. The net increase of $9,854 thousand in FY 2000 reflects a program increase of $10,000 thousand, an increase of $12 thousand for civilian pay rates, a decrease of -$143 thousand for non-pay inflation and a decrease of -$15 thousand for the Navy Working Capital Fund.

(U) Schedule:

(U) Technical:

(U) C. OTHER PROGRAM FUNDING SUMMARY

Appn	FY 1998 Budget	FY 1999 Budget	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	To Complete	Total Program
OPN BLI 4255 LAMPS MKIII Shipboard Equip	0	0	0	0	0	5,783	29,385	39,126	0	74,294

(U) D. ACQUISITION STRATEGY: PMA-299 plans to exercise an option on a DARPA contract for two vendors to develop a TCDL solution for LAMPS. Upon completion, two vendors will be qualified to compete on a Lockheed Martin Federal Systems (LMFS) proposal to provide TCDL production data links to LAMPS air and ship segments. Lockheed Martin will run the competition to down select and will integrate the TCDL KU-Band Data Link into the LAMPS MK III; aircraft and ships. Production will follow beginning in FY 2003.

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N** **PROJECT NUMBER: H2463**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development **PROJECT TITLE: LAMPS MK III Data Link**

(U) E.SCHEDULE PROFILE:

	FY 1998	FY 1999	FY 2000	TO COMPLETE
(U) Program Milestones				
(U) Engineering Milestones		(3Q) PDR (4Q) CDR	(3Q) IPR	
(U) T&E Milestones				DT/OT
(U) Contract Milestones		(3Q) Exercise DARPA Option		Pre-Prod Delivery

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS **DATE: February 1999**

PROJECT NUMBER: H2463
PROJECT TITLE: LAMPS DATALINK

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Engineering Analysis	SS/BOA	LM-Owego NY	0	296	Mar 99	950	Nov 99	1,000	2,246	2,246
Airborne and Ship Interface Studies	SS/BOA	LM-Owego NY	0	220	Mar 99			0	220	220
Hardware and Software Development	SS/TBD	LM-Owego NY	0					8,700	8,700	8,700
Hardware and Software Development	845/TBD	Harris Corp & GEC-Marconi Hazeltine VA	0	750	Feb 99	3,750	N/A	12,000	16,500	16,500
	845/TBD	L-3 Communication Salt Lake City, UT		750	Feb 99	3,750	N/A	12,000	16,500	16,500
Subtotal Product Development			**0**	**2,016**		**8,450**		**33,700**	**44,166**	**44,166**
Product Development Support	MIPR	Defense Advance Research Projects Agency (DARPA), VA	0	50	Feb 99	50	Nov 99	0	100	100
Subtotal Support Costs			**0**	**50**		**50**		**0**	**100**	**100**

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS **DATE: February 1999**

PROJECT NUMBER: H2463
PROJECT TITLE: LAMPS DATALINK

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
DT/OT	WX	VX-1, NAWCAD Pax	0	0	N/A	0	N/A	425	425	0
Performance Characteristics Testing	RX	NAWCAD, Pax	0	283	Jan 99	754	Nov 99	1148	2,185	2,185
Subtotal Test and Evaluation			**0**	**283**		**754**		**1573**	**2,610**	**2,185**
Engineering & Technical Services	RX	CSCI, VA	0	341	Feb 99	440	Nov 99	880	1,661	1,661
Government Engineering Support	WX	NAWC, St Inigoes	0	90	Feb 99	100	Nov 99	200	390	0
Program Management & Support	RX	NAWCAD, Pax	0	55	Apr 99	40	Nov 99	80	175	175
Travel	WX	NAWCAD, Pax	0	10	Feb 99	20	Nov 99	40	70	0
Subtotal Management			**0**	**496**		**600**		**1,200**	**2,296**	**1,910**
SBIR ASSESSMENT				**74**					**74**	
Total Cost			**0**	**2,993**		**9,854**		**36,473**	**49,320**	**48,261**